

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:

17.07.2002 Bulletin 2002/29

(51) Int Cl.7:

F01N 3/023, F01N 3/022,
F01N 3/035, F01N 3/08

(43) Date of publication A2:

04.10.2001 Bulletin 2001/40

(21) Application number:

01107618.9

(22) Date of filing:

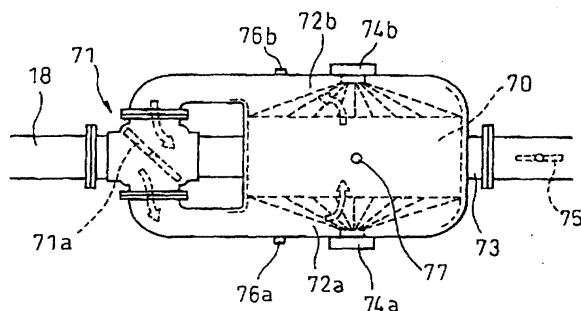
27.03.2001

(84) Designated Contracting States: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR Designated Extension States: AL LT LV MK RO SI	(72) Inventors: - Hirota, Shinya Toyota-shi, Aichi-ken, 471-8571 (JP) - Tanaka, Toshiaki Toyota-shi, Aichi-ken, 471-8571 (JP) - Nakatani, Koichiro Toyota-shi, Aichi-ken, 471-8571 (JP) - Itoh, Kazuhiro Toyota-shi, Aichi-ken, 471-8571 (JP) - Asanuma, Takamitsu Toyota-shi, Aichi-ken, 471-8571 (JP) - Kimura, Koichi Toyota-shi, Aichi-ken, 471-8571 (JP)
(30) Priority: 27.03.2000 JP 2000090755 27.03.2000 JP 2000090740 27.03.2000 JP 2000090746 28.03.2000 JP 2000093024 28.04.2000 JP 2000131653 28.03.2000 JP 2000093017	(74) Representative: Kuhnen & Wacker Patentanwalts-gesellschaft mbH, Postfach 19 64 85319 Freising (DE)
(71) Applicant: TOYOTA JIDOSHA KABUSHIKI KAISHA Aichi-ken 471-8571 (JP)	

(54) **A device for purifying the exhaust gas of an internal combustion engine**

(57) A device for purifying the exhaust gas of an internal combustion engine is disclosed. The device comprises a particulate filter (70) arranged in the exhaust system on which the trapped particulates are oxidized, and a reversing mechanism (71a,75) for reversing the exhaust gas upstream side and the exhaust gas downstream side of the particulate filter. The particulate filter has a trapping wall. The trapping wall has a first trapping surface and a second trapping surface. The reversing mechanism reverses the exhaust gas upstream side and the exhaust gas downstream side of the particulate filter so that the first trapping surface and the second trapping surface are used alternately to trap the particulates. The device can improve the amount of particulates that can be oxidized and removed on the particulate filter.

Fig.18





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 10 7618

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 10, 30 November 1995 (1995-11-30) & JP 07 189655 A (NIPPONDENSO CO LTD), 28 July 1995 (1995-07-28)	1-3, 5, 8, 17	F01N3/023 F01N3/022 F01N3/035 F01N3/08
A	* abstract *	14	
Y	EP 0 984 142 A (TOYOTA MOTOR CO LTD) 8 March 2000 (2000-03-08)	1-3, 5, 8, 17	
A	* column 13, line 28 - column 18, line 35; figures 1, 10, 13 * * column 17, line 54 - line 55 *	14-16	
A	PATENT ABSTRACTS OF JAPAN vol. 016, no. 090 (M-1218), 5 March 1992 (1992-03-05) & JP 03 271515 A (MAZDA MOTOR CORP), 3 December 1991 (1991-12-03) * abstract *	7	
A	PATENT ABSTRACTS OF JAPAN vol. 006, no. 033 (M-114), 27 February 1982 (1982-02-27) & JP 56 148607 A (ENUKOA:KK), 18 November 1981 (1981-11-18) * abstract *	14	TECHNICAL FIELDS SEARCHED (Int.Cl.7) F01N F02D
A	PATENT ABSTRACTS OF JAPAN vol. 017, no. 603 (M-1505), 5 November 1993 (1993-11-05) & JP 05 179928 A (TOYOTA MOTOR CORP), 20 July 1993 (1993-07-20) * abstract *	1, 14, 17	
A	JP 59 030507 U (-) 25 February 1984 (1984-02-25) * the whole document *	1, 14, 17	
		-/--	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 May 2002	Examiner Sideris, M
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 10 7618

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	DE 664 371 C (AUERGESELLSCHAFT AKT GES) 25 August 1938 (1938-08-25) * page 1, line 68 - page 2, line 83; figure *	1, 14, 17	
P, A	WO 00 42302 A (EMITEC EMISSIONSTECHNIK ; BRUECK ROLF (DE); MAUS WOLFGANG (DE)) 20 July 2000 (2000-07-20) * abstract; claims 1, 8; figures *	1-3, 8, 14-17	
D, A	JP 60 235620 A (ENGELHARD CORP) 22 November 1985 (1985-11-22)		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Place of search THE HAGUE		Date of completion of the search 29 May 2002	Examiner Sideris, M
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 10 7618

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

29-05-2002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 07189655	A	28-07-1995	NONE
EP 0984142	A	08-03-2000	EP 0984142 A1 08-03-2000 JP 3248187 B2 21-01-2002 US 6367246 B1 09-04-2002 WO 9848153 A1 29-10-1998
JP 03271515	A	03-12-1991	NONE
JP 56148607	A	18-11-1981	JP 1060652 B 25-12-1989 JP 1575770 C 24-08-1990
JP 05179928	A	20-07-1993	NONE
JP 59030507	U		NONE
DE 664371	C	25-08-1938	NONE
WO 0042302	A	20-07-2000	DE 19901760 A1 27-07-2000 AU 1865700 A 01-08-2000 CN 1336981 T 20-02-2002 WO 0042302 A1 20-07-2000 EP 1149230 A1 31-10-2001 US 2002011069 A1 31-01-2002
JP 60235620	A	22-11-1985	AT 39853 T 15-01-1989 CA 1242430 A1 27-09-1988 DE 3567385 D1 16-02-1989 DE 160482 T1 10-04-1986 EP 0160482 A2 06-11-1985 JP 2091655 C 18-09-1996 JP 7106290 B 15-11-1995 US 5100632 A 31-03-1992